

# Identification and Solutions to Common Pretreatment Violations on Army Installations

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# Pretreatment Basics

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- **Goal of pretreatment:**

To protect, preserve and improve surface water quality.

- **How?**

Limit pollution from nondomestic dischargers to WWTPs.



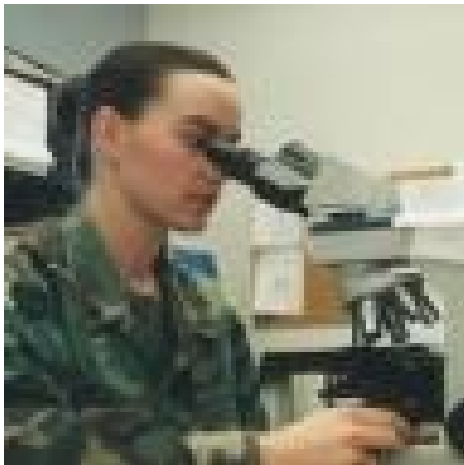
# Nondomestic discharges include wastewater from commercial or industrial sources



Dining Halls



Maintenance Shops



Laboratories



Health Care Facilities

# Currently, it is not required for FOTWs to have a pretreatment program

More stringent discharge requirements

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—Continued privatization of GOGO utilities—

Voluntary implementation of pretreatment programs



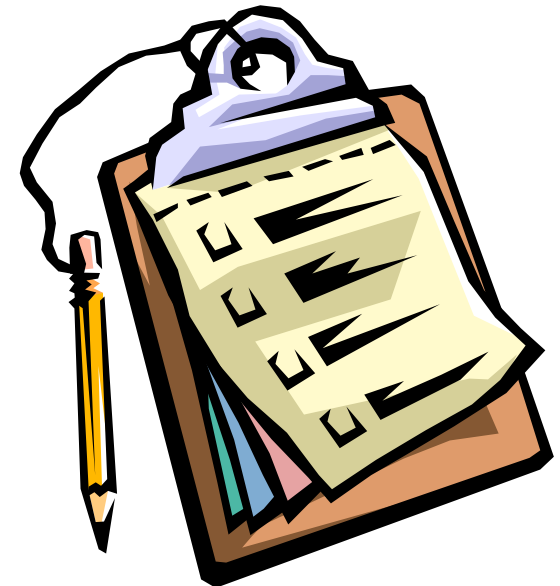
# A variety of discharge limits may be implemented depending on installation activities and size.

Parameters	Mechanical Testing and Range Activity Discharge Limits (mg/L)	Chemical and Biological Activity Discharge Limits (mg/L)
BOD <sub>5</sub>	908.0	566.0
TSS	1320.0	595.0
Ammonia - N	40.0	40.0
Phosphorus, total	31.3	45.0
TPH	100.0	100.0
TTO	2.13	2.13
Cadmium, total	0.10	0.10
Chromium, total	0.70	0.50
Lead, total	0.30	0.10
Mercury, total	0.002	0.002
Silver, total	0.10	0.10
Zinc, total	5.50	1.00
Cyanide, total	1.30	3.60

# **During pretreatment compliance evaluations, six recurring findings have emerged.**

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1. Ammonia
2. Mercury
3. Low Flow
4. BOD<sub>5</sub> and TSS
5. Silver
6. Paperwork/Notification



# Ammonia in excess of discharge requirements was found at many different facilities

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- Facilities were mainly domestic dischargers
- Or not expected to contain ammonia at all
- Often 2-3 times the discharge requirement (40 mg/L)



Eliminate Wastewater Ammonia  
Even in **COLD** Weather!  
**CLICK HERE!**

# Source of ammonia likely from disinfectant cleaners used to sanitize restrooms.

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- Most government facilities have phased out ammonia cleaners for environmental and safety reasons.
- Alternative cleaners still contain ammonium salts
- Orange (citrus) -based clear alternative to ammonia-cont





# Mercury violations were common at health care facilities.

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- Levels found as high as 500x the discharge limit (0.002mg/L)
- Mercury found predominantly in wastewater solids



# **There are still many sources of mercury in health care facilities despite minimization programs.**

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- Cleaners, reagents, pigments and stains
- X-ray processing fixer
- Historical spills/discharges
- Dental amalgam



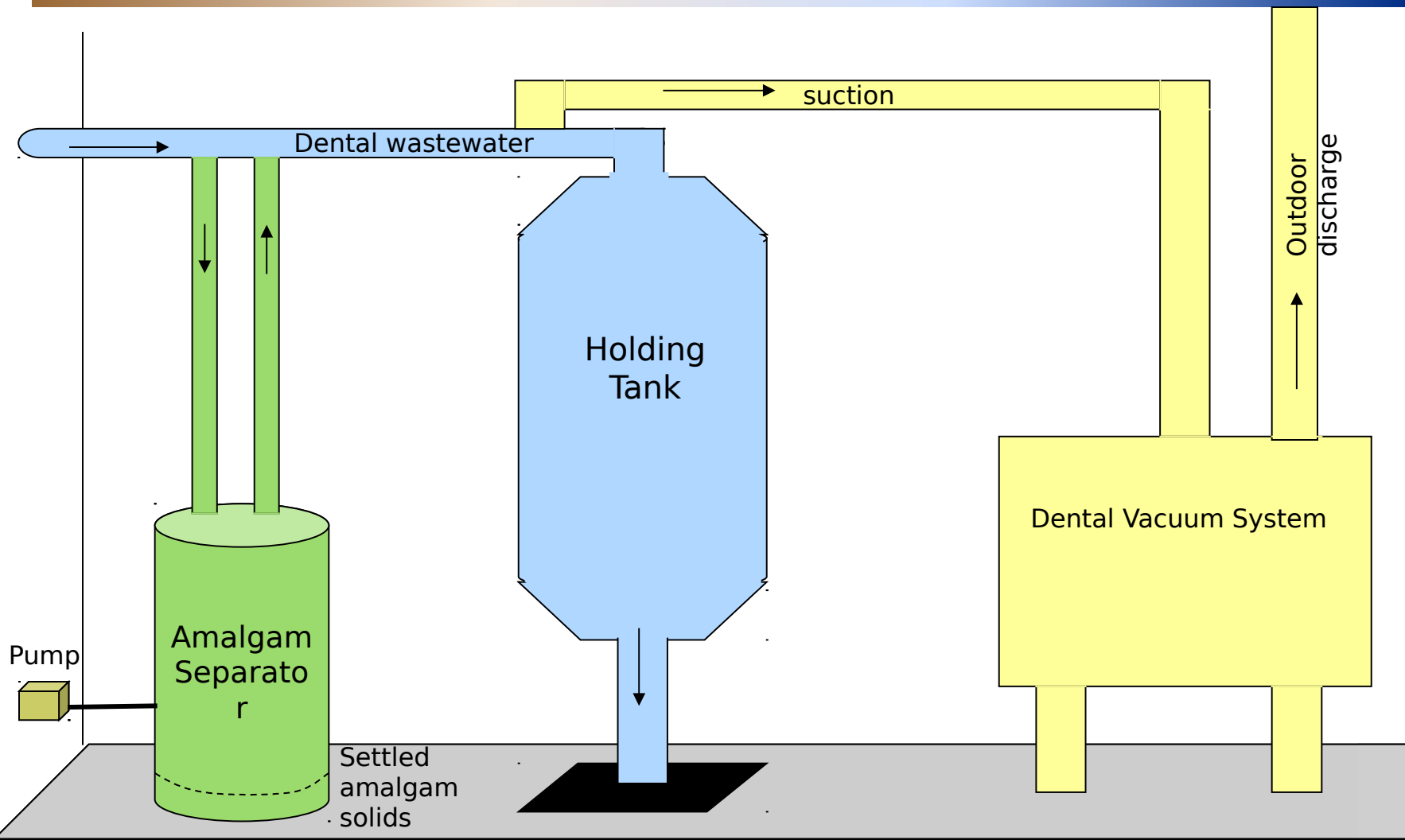
# Mercury minimization options for health care facilities.

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- Remove mercury-containing thermometers and reagents
- Consider investigating sink traps for historical contaminations
- Collecting amalgam solids too small for sink and chair traps
- Mercury separation devices can be the option



# Example amalgam separation diagram



# Low flow waste streams continually exceeded multiple discharge limits

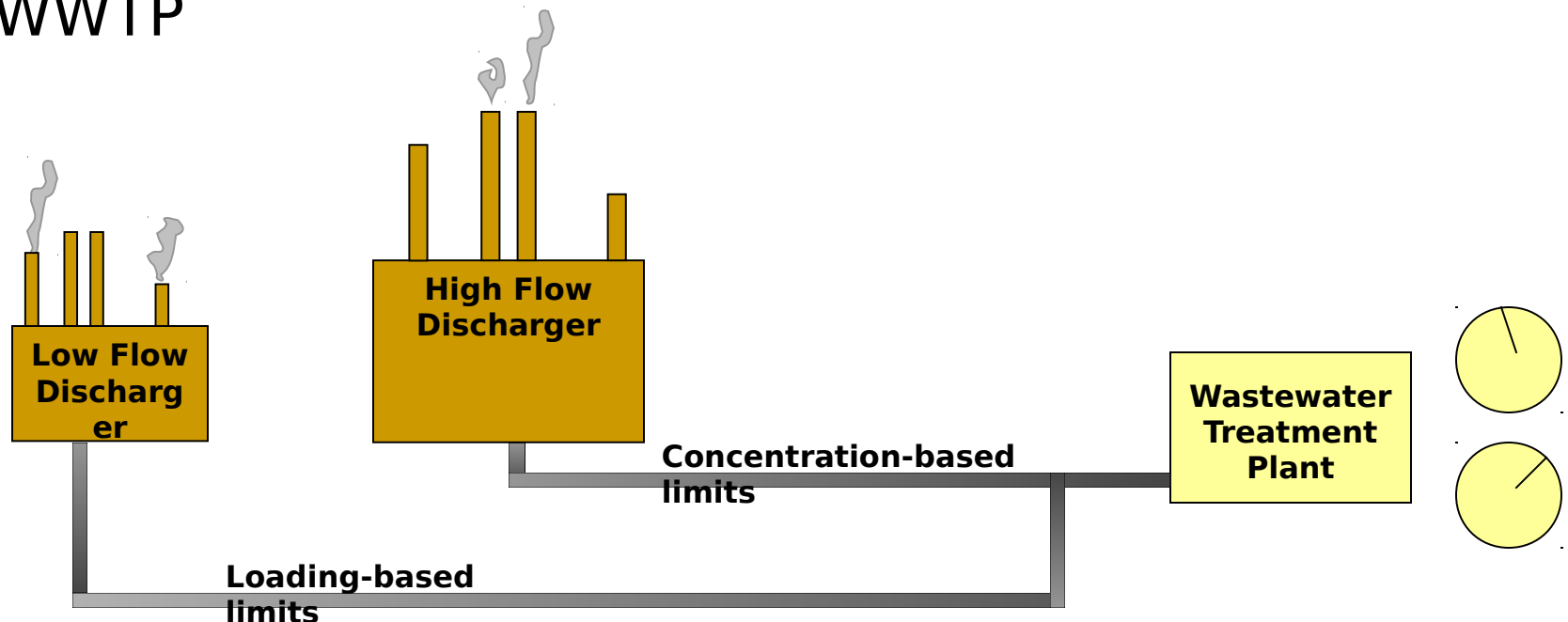
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- Flow < 2,500 gpd
- Concentrations often exceeded limits although discharger impact on the WWTP is negligible
- For small industrial dischargers conc. based limits:
  - Can be burdensome
  - May hinder water conservation practices



# Loading-based discharge limits may be more appropriate for low flow dischargers

- EPA allows for industrial user limits to be determined on a case by case basis
- A combination of concentration-based and loading-based limits is allowable for a single WWTP



# **BOD<sub>5</sub> and TSS concentrations routinely exceeded limits at military dining facilities**

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- Contained food wastes from garbage disposals
- Increased BOD loading can be beneficial to organically under loaded WWTPs
- Consideration should be given to relaxing these limits at dining facilities that contribute to organically under loaded WWTPs



# Silver concentrations from photo processors exceeded discharge limits

- Photo-finishing effluents often contain Cd and Ag (in the form of  $\text{CdBr}_2$  and  $\text{AgNO}_3$ )
- Ion exchange silver recovery systems should be tested for effectiveness regularly
- Consider going to digital photo processing systems





# Discharge waivers often not renewed or present at the discharge locations

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- Continued personnel education on:
  - Proper handling procedures
  - Potential effects of illicit or inadvertent discharges
- Implementing harsher consequences for pretreatment violations may also be a viable deterrent
- Notifying dischargers of violations



# In conclusion

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- Six recurring pretreatment findings (and solutions):
  - Ammonia
  - Mercury
  - Low Flow
  - BOD<sub>5</sub> and TSS
  - Silver
  - Paperwork

- Questions?

